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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,147	04/14/2004	Ronald Edward Bretschneider	SJO920030069US1	6375

45216 7590 04/03/2007

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EXAMINER	
TRUONG, LOAN	
ART UNIT	**PAPER NUMBER**
2114	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/824,147	BRETSCHNEIDER ET AL.	
	Examiner	Art Unit	
	LOAN TRUONG	2114	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) *5,15,23,27* is/are withdrawn from consideration.

5)☒ Claim(s) *1-4 and 6-9* is/are allowed.

6)☒ Claim(s) *10-14,16-22 and 24-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is in response to applicant's argument filed January 05, 2007.

2. Claims 1-4, 6-14, 16-22, 24-26 and 28-30 are presented for examination. Claims 1, 4, 9-10, 20, 24-26, and 30 have been amended. Claims 5, 15, 23 and 27 are cancelled.

Response to Arguments

3. Applicant's arguments with respect to claims 1-30 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

4. Claims 1-4 and 6-9 are allowable.

The following is an examiner's statement of reasons for the allowance: The examiner deem claims 1-4 and 6-9 as novel when read as a whole for the limitations of a recovery coordination module configured to accept and reject requests from a recovery module to unregister the recovery module as the counterpart of the first computer upon request and the recovery module configured to unregister with the recovery coordination module as the counterpart of the first computer responsive to the detection module detecting the failure of the first computer.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 10-11, 13-14, 16, 20-21, 24-26, 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 2003/0079154) in further view of Iwamoto (US 2002/0078207) in further view of Shorb (US 2005,0114609).

In regard to claim 10, Park et al. teach a system for cluster-wide peer recovery, the system comprising:

a first computer (*primary server, fig. 5, 504)*;

a second computer (*spare server, fig. 5, 505)* in communication with the first computer and configured to detect a failure of the first computer (*fault tolerance module, fault detection, fig. 5, 503)*, wherein the second computer registers as the counterpart of the failed first computer

(*duplexing, primary server select spare server, paragraph 0024)*, recovers the operation of the failed first computer (*transition of all functions of the primary server to the spare server, paragraph 0031)*, and unregisters as the counterpart of the failed first computer (*registering the spare server as primary and register the fault-recovered server as a spare server, paragraph 0031)*;

a shared memory controller in communication with the first computer and the second computer configured to store and retrieve computer component status and log data, the shared memory controller further configured to prevent unauthorized access to private log data and to lock data resources (*system monitor and system state collector, fig. 9, 703, 702, paragraph 0078 and 0079)*; and

a disk configured to store and retrieve user data and system data in the disk's storage media for the cluster (*disk array, fig. 1)*.

Park et al. does not teach the system for cluster-wide peer recovery responsive to detecting the failure of the first computer, wherein the second computer recovers the operation of the first computer by initializing and starting as the counterpart of the first computer, retrieving the private log data of the first computer, backing out an in-flight transaction update of the first computer by writing a before image derived from an undo log to files on a disks.

Iwamoto teach the online system recovery system method and program where when an error took place in the active online system, the monitor processor 11 and 21 detects the error and changes the execution authority of the business transaction to the stand-by online system (*fig. 2, 126, paragraph 0043)*. When the active online system is

switched to the stand-by online system, the system waits for completion of the tracing operation of the log information not processed and start new business transaction service while concurrently rolls back the transaction not completed (*fig. 2, 124, 226, paragraph 0045)*..

It would have been obvious to modify the system of Park et al. by adding Iwamoto online system recovery system. A person of ordinary skill in the art at the time of applicant's invention would have been motivated to make the modification because it would provide an online processing system necessary for high-speed recovering operation due o a system down (*paragraph 0001).*

Park et al. and Iwamoto does not teach the system for cluster-wide peer recovery responsive to releasing a data resource locked by the first computer.

Shorb teaches the system and method for lock handling by having lock state information is used to indicate when lock-related events are to be posted by one thread such as a lock release events notified that a thread has completed its access of a resource (*paragraph 0025).*

It would have been obvious to modify the system of Park et al. and Iwamoto online by adding Shorb system for lock handling. A person of ordinary skill in the art at the time of applicant's invention would provide a computer-implemented accessing of resources particularly to lock handling in the accessing of resources (*paragraph 0001).*

In regard to claim 11, Park et al. disclosed the system of claim 10, the second computer further configured to initiate peer recovery automatically (*upon detecting a fault of the server,*

the fault recoverer executes a function transition from the primary server to the spare server, paragraph 0075).

In regard to claim 13, Park et al. disclosed the system of claim 10, wherein the shared memory controller comprises a dedicated processor and a memory module (*system monitor and system state collector, fig. 9, 703, 702, paragraph 0078 and 0079).*

In regard to claim 14, Park et al. disclosed the system of claim 13, wherein the memory module is nonvolatile memory (*disk array, fig. 1).*

In regard to claim16, Park et al. disclosed the system of claim 10, the second computer further configured to block a third computer (*spare server selection only occurs at the start of rejuvenation, fig. 10, s103)* and the first computer (*primary server is excluded from available server list of load balancer, fig. 10, s105)* from registering as the counterpart of the first computer (*duplex all process of primary server, fig. 10).*

In regard to claim 20, Park et al. disclosed a computer readable storage medium comprising computer readable code configured to carry out a method for peer recovery, the method comprising:

detecting a failure of a first computer (*fault tolerance module, fault detection, fig. 5, 503)*;

registering the second computer as a counterpart of the first computer (*duplexing, primary server select spare server, paragraph 0024)*;

recovering the operation of the first computer (*transition of all functions of the primary server to the spare server, paragraph 0031);* and

unregistering the counterpart of the first computer (*registering the spare server as primary and register the fault-recovered server as a spare server, paragraph 0031).*

Park et al. does not teach the system for cluster-wide peer recovery responsive to detecting the failure of the first computer by the second computer, wherein the second computer recovers the operation of the first computer by the second computer by initializing and starting as the counterpart of the first computer, retrieving the private log data of the first computer, backing out an in-flight transaction update of the first computer by writing a before image derived from an undo log to files on a disks.

Iwamoto teach the online system recovery system method and program where the monitoring processor 11 monitors the operating state of the party system by exchanging a control message for mutual monitoring with a monitor processor 21 (*fig. 1, 11, 21, paragraph 0023)* when an error took place in the active online system, the monitor processor 11 and 21 detects the error and changes the execution authority of the business transaction to the stand-by online system (*fig. 2, 126, paragraph 0043).* When the active online system is switched to the stand-by online system, the system waits for completion of the tracing operation of the log information not processed and start new business transaction service while concurrently rolls back the transaction not completed (*fig. 2, 124, 226, paragraph 0045).*

Refer to claim 10 for motivational statement.

Park et al. and Iwamoto does not teach the system for cluster-wide peer recovery responsive to releasing a data resource locked by the first computer.

Shorb teaches the system and method for lock handling by having lock state information is used to indicate when lock-related events are to be posted by one thread such as a lock release events notified that a thread has completed its access of a resource *(paragraph 0025)*.

Refer to claim 10 for motivational statement.

In regard to claim 21, Park et al disclosed the computer readable storage medium of claim 20, the method further comprising computer readable code configured to initiate the peer recovery automatically *(upon detecting a fault of the server, the fault recoverer executes a function transition from the primary server to the spare server, paragraph 0075)*.

In regard to claim 24, Park et al. disclosed the computer readable storage medium of claim 20, the method further comprising blocking a third computer *(spare server selection only occurs at the start of rejuvenation, fig. 10, s103)* and the first computer *(primary server is excluded from available server list of load balancer, fig. 10, s105)* from registering as the counterpart of the first computer *(duplex all process of primary server, fig. 10)*.

In regard to claim 25, Park et al. disclosed a method for peer recovery, the method comprising:

detecting a failure in a first computer *(fault tolerance module, fault detection, fig. 5, 503)*;

registering the second computer as a counterpart of the first computer (*duplexing, primary server select spare server, paragraph 0024)*;

recovering the operation of the first computer by the counterpart (*transition of all functions of the primary server to the spare server, paragraph 0031)*; and

unregistering the counterpart of the first computer (*registering the spare server as primary and register the fault-recovered server as a spare server, paragraph 0031).*

Park et al. does not teach the system for cluster-wide peer recovery responsive to detecting the failure of the first computer by the second computer, wherein the second computer recovers the operation of the first computer by initializing and starting as the counterpart of the first computer, retrieving the private log data of the first computer, backing out an in-flight transaction update of the first computer by writing a before image derived from an undo log to files on a disk.

Iwamoto teach the online system recovery system method and program where the monitoring processor 11 monitors the operating state of the party system by exchanging a control message for mutual monitoring with a monitor processor 21 (*fig. 1, 11, 21, paragraph 0023)* when an error took place in the active online system, the monitor processor 11 and 21 detects the error and changes the execution authority of the business transaction to the stand-by online system (*fig. 2, 126, paragraph 0043).* When the active online system is switched to the stand-by online system, the system waits for completion of the tracing operation of the log information not processed and start new business transaction service while concurrently rolls back the transaction not completed (*fig. 2, 124, 226, paragraph 0045).*

Refer to claim 10 for motivational statement.

Park et al. and Iwamoto does not teach the system for cluster-wide peer recovery responsive to releasing a data resource locked by the first computer.

Shorb teaches the system and method for lock handling by having lock state information is used to indicate when lock-related events are to be posted by one thread such as a lock release events notified that a thread has completed its access of a resource *(paragraph 0025).*

Refer to claim 10 for motivational statement.

In regard to claim 26, Park et al. disclosed the method of claim 25, the method further comprising blocking a third computer (*spare server selection only occurs at the start of rejuvenation, fig. 10, s103)* and the first computer (*primary server is excluded from available server list of load balancer, fig. 10, s105)* from registering as the counterpart of the first computer (*duplex all process of primary server, fig. 10).*

In regard to claim 28, Park et al. disclosed the method of claim 25, further comprising initiating peer recovery automatically (*upon detecting a fault of the server, the fault recoverer executes a function transition from the primary server to the spare server, paragraph 0075).*

In regard to claim 30, Park et al. disclosed an apparatus for peer recovery, the apparatus comprising:

means for detecting a failure of a first computer (*fault tolerance module, fault detection, fig. 5, 503)*;

means for registering the second computer as a counterpart of the first computer (*duplexing, primary server select spare server, paragraph 0024)*;

means for blocking a third computer from registering as the counterpart of the first computer (*spare server selection only occurs at the start of rejuvenation, fig. 10, s103)*;

means for recovering the operation of the first computer by the second computer (*transition of all functions of the primary server to the spare server, paragraph 0031)*; and

means for unregistering the second computer as the counterpart of the first computer (*registering the spare server as primary and register the fault-recovered server as a spare server, paragraph 0031).*

Park et al. does not teach the system for cluster-wide peer recovery responsive to detecting the failure of the first computer by the second computer, wherein the second computer recovers the operation of the first computer by initializing and starting as the counterpart of the first computer, retrieving the private log data of the first computer, backing out an in-flight transaction update of the first computer by writing a before image derived from an undo log to files on a disk.

Iwamoto teach the online system recovery system method and program where the monitoring processor 11 monitors the operating state of the party system by exchanging a control message for mutual monitoring with a monitor processor 21 (*fig. 1, 11, 21, paragraph 0023)* when an error took place in the active online system, the monitor processor 11 and 21 detects the error and changes the execution authority of the business

transaction to the stand-by online system *(fig. 2, 126, paragraph 0043)*. When the active online system is switched to the stand-by online system, the system waits for completion of the tracing operation of the log information not processed and start new business transaction service while concurrently rolls back the transaction not completed *(fig. 2, 124, 226, paragraph 0045)*.

Refer to claim 10 for motivational statement.

Park et al. and Iwamoto does not teach the system for cluster-wide peer recovery responsive to releasing a data resource locked by the first computer.

Shorb teaches the system and method for lock handling by having lock state information is used to indicate when lock-related events are to be posted by one thread such as a lock release events notified that a thread has completed its access of a resource *(paragraph 0025)*.

Refer to claim 10 for motivational statement.

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5. Claims 12, 22 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 2003/0079154) in further view of Iwamoto (US 2002/0078207) in further view of Shorb (US 2005,0114609) in further view of Belov (US 2003/0187859).

In regard to claim 12, Park et al., Iwamato and Shorb does not teach the system of claim 10, the second computer further configured to initiate peer recovery responsive to an operator command.

Belov teach the system of recovering and checking large file systems in an object-based data storage system where the FSRC module may be self-executing or executed by an external command (*paragraph 0043).*

It would have been obvious to modify the system of Park et al. by adding Belov system of recovering and checking large file systems in an object-based data storage system. A person of ordinary skill in the art at the time of applicant's invention would have been motivated to make the modification because it would efficiently check a file system that has a very large number of objects (*paragraph 0010).*

In regard to claim 22, Park et al., Iwamato and Shorb does not teach the computer readable storage medium of claim 20, the method further comprising computer readable code configured to initiate the peer recovery responsive to an operator command.

Belov teach the system of recovering and checking large file systems in an object-based data storage system where the FSRC module may be self-executing or executed by an external command (*paragraph 0043).*

Refer to claim 12 for motivational statement.

In regard to claim 29, Park et al., Iwamato and Shorb does not teach the method of claim 25, further comprising initiating peer recovery responsive to an operator command.

Belov teach the system of recovering and checking large file systems in an object-based data storage system where the FSRC module may be self-executing or executed by an external command *(paragraph 0043)*.

Refer to claim 12 for motivational statement.

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6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 2003/0079154) in further view of Iwamoto (US 2002/0078207) in further view of Shorb (US 2005,0114609) in further view of Conti et al. (US 5,291,490).

In regard to claim 17, Park et al., Iwamato and Shorb does not teach the system of claim 10, wherein the first computer and the second computer communicate point-to-point, using a channel-to-channel communication connection comprising an inbound signaling path and an outbound signaling path.

Conti et al. teach the system of node for communication network by implementing a logical point-to-point connection between pairs of nodes *(col. 2 lines 55-65)* where data can be transfer by an intenal or external ring *(fig. 11, 84)*.

It would have been obvious to modify the system of Park et al. by adding Conti et al. system of node for communication network. A person of ordinary skill in the art at the time of applicant's invention would have been motivated to make the modification because it would increases the flexibility by permitting node to be interconnected

regardless of the physical interconnection media (*col. 1 lines 60-67 and col. 2 lines 1-2).*

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7. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 2003/0079154) in further view of Iwamoto (US 2002/0078207) in further view of Shorb (US 2005,0114609) in further view of Olarig (US 6,018,810).

In regard to claim 18, Park et al., Iwamato and Shorb does not teach the system of claim 10, wherein the computers use a symmetric multiprocessor configuration.

Olarig teaches the system of fault-tolerant interconnection means in a computer system where the CPU may be a plurality of CPUs in a symmetric configuration (*fig. 1, 102, col. 8, lines 8-11)*

It would have been obvious to modify the system of Park et al. by adding Olarig system of fault-tolerant interconnection means in a computer system. A person of ordinary skill in the art at the time of applicant's invention would have been motivated to make the modification because it would improve fault tolerance on a 64-bit data-width PCI bus that may have an operating fault (*col. 4 lines 16-20).*

In regard to claim 19, Park et al., Iwamato and Shorb does not teach the system of claim 10, wherein the computers use an asymmetric multiprocessor configuration.

Olarig teaches the system of fault-tolerant interconnection means in a computer system where the CPU may be a plurality of CPUs in an asymmetric configuration *(fig. 1, 102, col. 8, lines 8-11)*

Refer to claim 18 for motivational statement.

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Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO 892.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOAN TRUONG whose telephone number is (571) 272-2572. The examiner can normally be reached on M-F from 8am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SCOTT BADERMAN can be reached on (571) 272-3644. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Loan Truong
Patent Examiner
Art Unit: 2114

SCOTT BADERMAN
SUPERVISORY PATENT EXAMINER